N93-26965

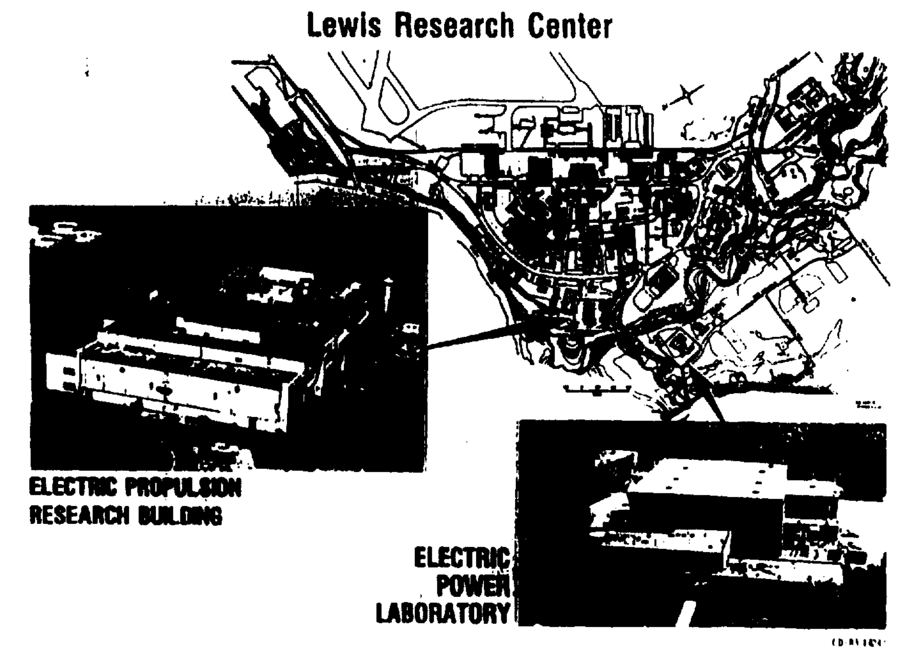




NEP FACILITIES (LERC)

Nuclear Propulsion Technical Interchange
October 21, 1992

R. H. Vetrone
Facility Manager/EPL, EPRB, Stirling



SPACE SIMULATION FACILITIES
Lewis Research Center



SPACE PROPULSION TECHNOLOGY DIVISION



EPRB
ELECTRIC PROPULSION RESEARCH BUILDING(#16)

FACILITIES

VACUUM CHAMBERS (9): RANGE FROM 3FT. TO 10FT. DIA.

BELL JAR SYSTEMS (6)

CAPABILITIES

EXTREMELY HIGH (~ 1000 STD L/M - H_2 @ 10^{-1} TORR) PUMPING SPEEDS

HIGH VACUUM LEVELS (10^{-7} TORR)

CRYOPUMPED CHAMBERS

ACTIVITIES

COMPONENT DEVELOPMENT

THRUSTER TESTING

POWER CONDITIONING INTEGRATION



SPACE PROPULSION TECHNOLOGY DIVISION



EPL
ELECTRIC POWER LABORATORY (BLDG.301)

FACILITIES:

VACUUM CHAMBERS(3): 5FT. X 15FT.; 15FT. X 63FT; 25FT. DIA. X 82FT. LONG
BELL JAR SYSTEMS(7)

MAJOR FEATURES:

CLOSED LOOP REFRIG. SYSTEM TO ODP TRAPS
FULLY AUTOMATED
<<< UTILIZATION - >>> LOW OPERATING COST & MANPOWER REQUIREMENTS

TANK 6:

* 20 OD PUMPS; 4 FORELINE BLOWERS; 3 MECHANICAL PUMPS
* > 240 KW THERMAL REJECTION LN_2 COOLED SHROUD

o SOLAR SIMULATOR

TANK 5:

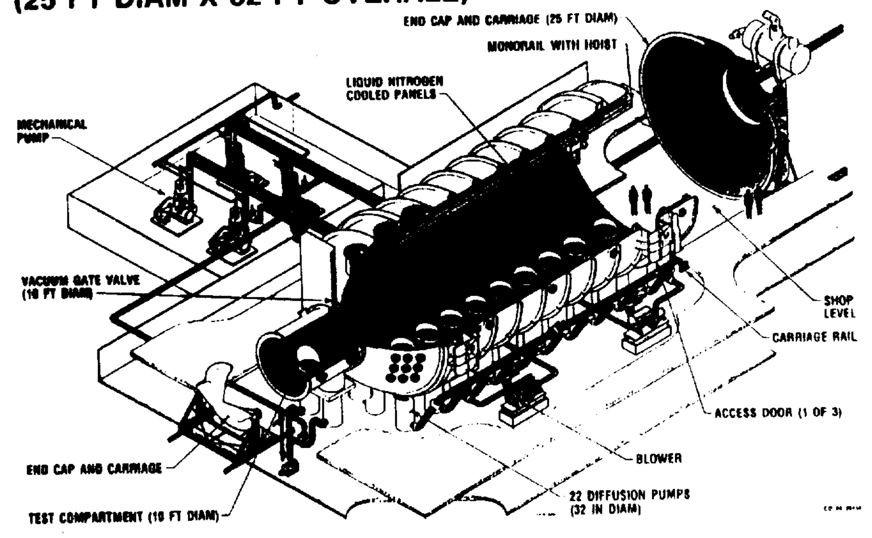
2000 PUMPS; 4 FORELINE BLOWERS; 4 MECHANICAL PUMPS
41M^2 CRYOPANEL - GHe/LHe REFRIGERATOR/LIQUIFIER CRYO-SYSTEM

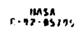
* EXPECTED IN POST 1991 COF PROJECT
o ADVOCATE: 5400; INSTALL & OP 1994/1995

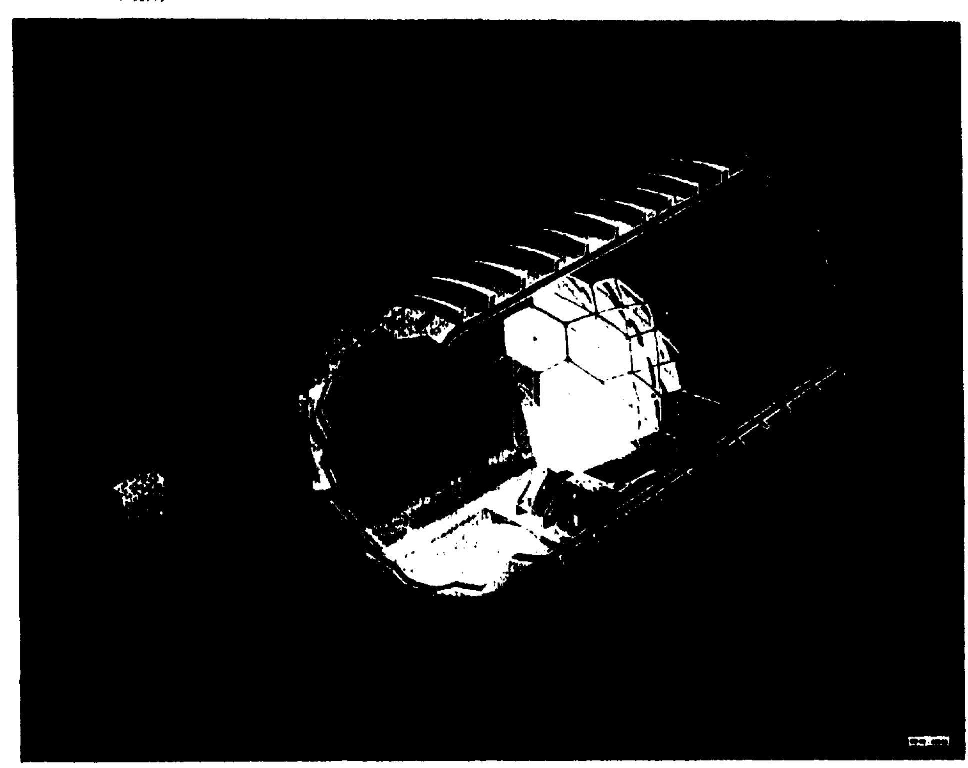
NASA
C-86-7959

Lewis Research Center

TANK 6 VACUUM FACILITY
(25 FT DIAM X 82 FT OVERALL)

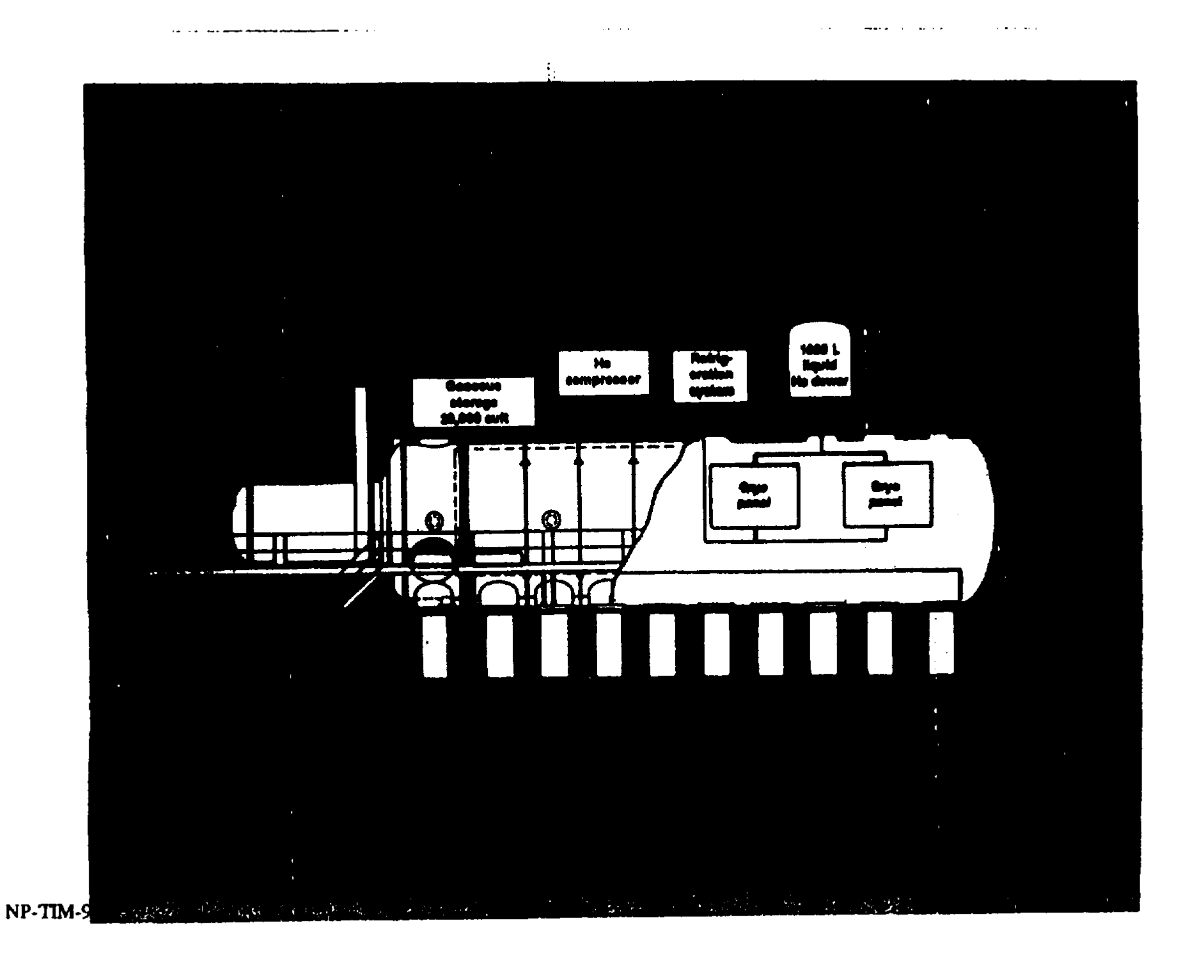


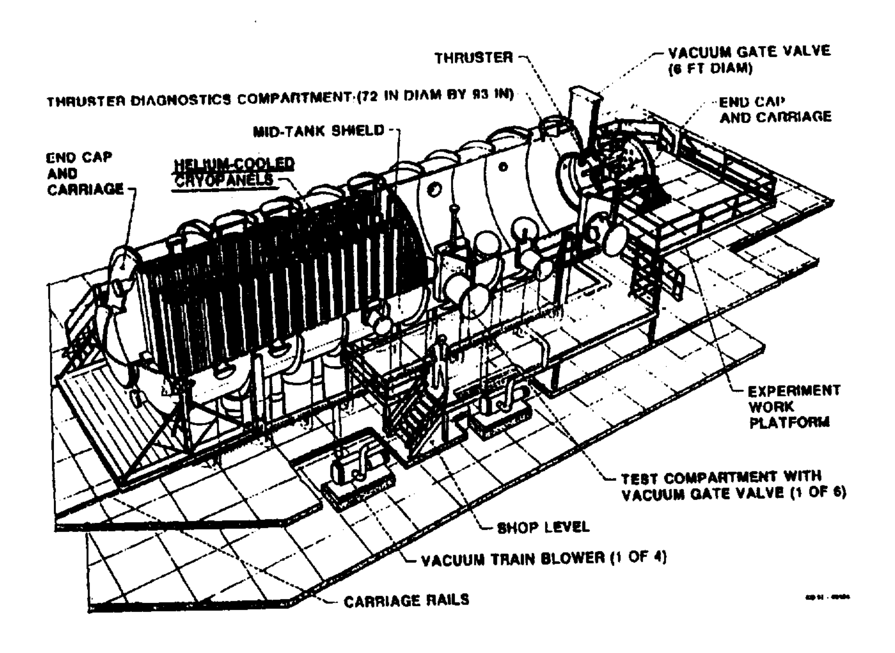





NASA




He
compressor



ATD AEROSPACE TECHNOLOGY DIRECTORATE

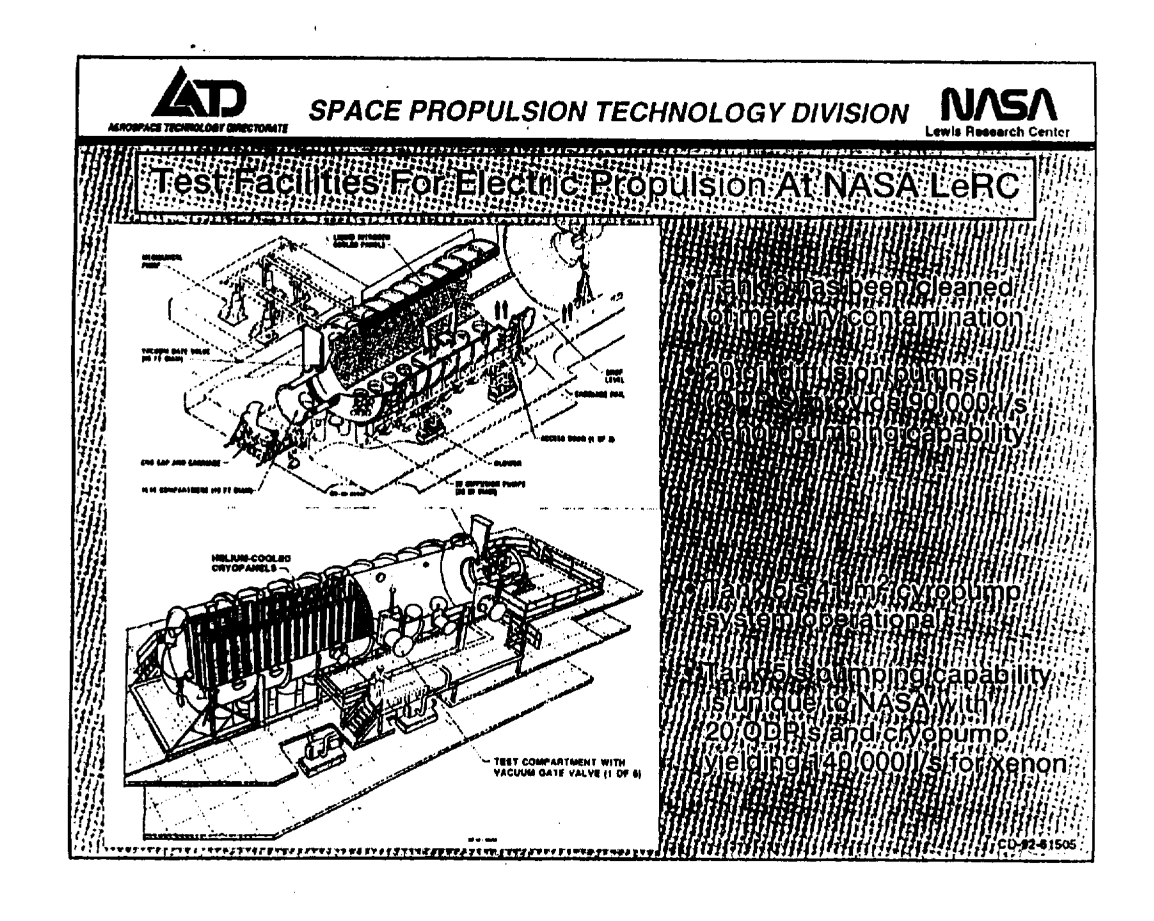
SPACE PROPULSION TECHNOLOGY DIVISION

NASA Lewis Research Center

NUCLEAR ELECTRIC PROPULSION

LOW THRUST, ELECTRIC	ION		MPD	
	5KW (Xe)	25KW (Xe,Kr)	100KW (H_2)	200KW (Ar)
$\dot{M}$(Mg/s)	5.3	27	40	320
REQ'D.PRESS.(TORR)	$<1.0 \times 10^{-5}$	$<1.0 \times 10^{-5}$	$<3.0 \times 10^{-4}$	$<3.0 \times 10^{-4}$
TANK 5 FACILITY				
(20)ODP/$\dot{M}$(Mg/S)	5.3	22	25.5	100
ACTUAL PRESS(TORR)	1.3×10^{-5}	3.7×10^{-5}	4.8×10^{-4}	2.3×10^{-4}
CRYOPANEL/$\dot{M}$(Mg/S)	8.0	TBD	TBD	155
ACTUAL PRESS (TORR)	1.2×10^{-5}	TBD	TBD	1.0×10^{-4}
FOCUS		*	*	

[USING FOUR(4) FORELINE BLOWERS & MECH. PUMPS = 300 Mg/SEC.@ 6×10^{-1} TORR - H_2]


AEROSPACE TECHNOLOGY DIRECTORATE
SPACE PROPULSION TECHNOLOGY DIVISION
NASA
Lewis Research Center
Test Facilities For Electric Propulsion At NASA LeRC
HELIUM-COOLED CRYOPANELS
TEST COMPARTMENT WITH VACUUM GATE VALVE (1 OF 6)
• Tank 5 has been cleaned of mercury contamination
• 20 oil diffusion pumps (ODP's) provide 90,000 l/s xenon pumping capability
• Tank 5's 41 m2 cryopump system operational
• Tank 5's pumping capability is unique to NASA with 20 ODP's and cryopump yielding 140,000 l/s for xenon
CD-92-61505